IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: AZAD, Mina, M.
Serial No.:   10/032,014
Filed: December 31, 2001
Title: LABEL SWITCHED PATH OAM WRAPPER
Group: 2144
Examiner: GEREZGIHER, Yemane M.
Attorney Ref.:   PAT 2224-2 US

DECLARATION UNDER 37 CFR 1.131

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on the 30th of November, 2006.

1. I am the inventor of the subject application.

2. The invention, as described and claimed in the subject application, was completed, prior to September 28, 2001, in Canada, as established by the following:

    (a) On July 4, 2001, an Invention Disclosure was submitted by myself using an internal disclosure process, which is attached hereto as Exhibit "A", redacted to hide my personal information, where the present invention was clearly described.

    (b) The Invention Disclosure offered, inter alia, a description of the invention, problems solved by the invention and the commercial value of the invention.

    (c) On July 5, 2001, Allan Millard, IP Counsel, sent a reply, attached hereto as Exhibit "B", acknowledging the receipt of the Invention Disclosure.

    (d) The Invention Disclosure underwent an internal review process, and was approved, evidenced in a letter sent by Allan Millard, on September 10, 2001, attached hereto as Exhibit "C".

(e) I then worked with the outside patent counsel to prepare the present application for filing with the U.S. Patent and Trademark Office.

Mina Azad
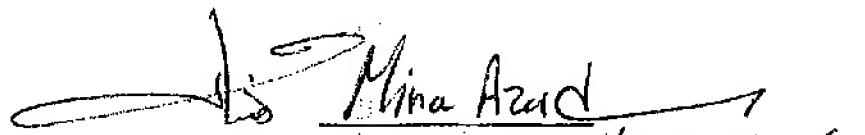
Mina M. Azad   Nov 30, 2006.

**THIS IS EXHIBIT "A" TO THE
DECLARATION OF MINA M. AZAD
EXECUTED THIS 30TH DAY OF NOVEMBER, 2006**

Invention Disclosure Submission Reply

Disc No:		Received Date:	04 jul 2001
Disclosure Title:	Label Switched Path OAM Wrapper		

---=== Inventors ===--- *14758RO*

Global Id	Name	Work Info	Home Info
1561887	**HR Name:** AZAD, MINA M **Known As:** MINA **Email:** mazad@americasm01.nt.com **Mgr First Name:** KHALID **Mgr Last Name:** AHMAD **Mgr Global ID:** 1189445	**Location:** 3500 CARLING AVENUE NEPEAN ONTARIO K2H 8E9 CANADA **Location Code:** CAR **Dept:** CS67 **Phone:** 3932044 **Ext Phone:** **Fax:** **Ext Fax:** **MailStop:** 04371B30 **Citizenship:** CANADA	**Address:** **Phone:**

---=== Attachments ===---

<End of Attachments>

Were there additional inventors involved:	no	Was there contractor involvement:	no
Name of Supervisor or Divisional Head:		**Name of VP:**	
KHALID AHMAD		LLOYD CARNEY	
LOB:	WIRELESS & CORE NETWORKS	**Business Unit:**	Core Networks
Conception Date:			

Has this invention been discussed with others? If so, please complete:			
Inside Nortel - Whom?	CS00 PATENT PROPOSALS REVIEW MEETING	**Outside Nortel - Whom?**	
Inside Nortel - When?	26 jun 2001	**Outside Nortel - When?**	
NDA?	no		

Are you aware of any imminent future disclosures? Please provide dates and details:

This patent idea is to be disclosed in an Intenet Draft that is targetted for discussion in the IETF 51, Aug 8-5, London, UK. Therefore a provisional filing is required ASAP.

Keywords for Searching:	Products that will use this invention:

Does this invention arise from any arrangement involving an external organization?	no
Is this invention relevant to a Standards Activity?	Internal Funding Project #'s:
yes	28694

Technical Information

Brief Description of the Invention:

Title: Label Switched Path OAM Wrapper

Abstract: Built based on MPLS label stack encoding, Label Switch Path OAM wrapper is introduced to allow monitoring of individual segments of a Label Switch Path (LSP).

Introduction: This proposal introduces the concept of Label Switch Path OAM wrapper. The purpose of LSP OAM wrappers is to wrap LSP segments in logical tunnels whose end-points are OAM capable LSRs (for example ingress, egress, and merge-points or geographically significant LSRs). This functionality is required to sectionalize LSPs for fault isolation and loopback, especially in case of multipoint-to-point LSPs.

Methodology:
LSP wrappers are built as "stack attributes" of the original LSP. By using implicit peering techniques, one could make a logical mesh of OAM capable LSRs to communicate over the same connection and same facilities as the LSP that is under monitoring. This effectively allows OAM cells traverse along the LSP user-plane to the next OAM capable node. The binding between the OAM wrapper and the original LSP is updated when there is a change in LSP forwarding information because Label Distribution Protocols are mandated to distribute attributes when distributing and updating labels.

Problem Solved by the Invention:

As opposed to ATM, MPLS LSPs are considered end-to-end and the concept of LSP segment is not well defined [RFC 3031 and RFC 3032]. The current MPLS user-plane OAM draft recommendations [Harrison-et-al same as ITU-T Y.17oam/Y.1711] take advantage of the MPLS user-plane encoding [RFC 3032]. They propose use of a reserved MPLS label value (tentatively 14) at the bottom of the label stack to transport OAM information between an LSP ingress and egress. This use of label stack limits OAM processing to LSP ingress and egress LSRs and hence unburdens interim LSRs from OAM activities such as performance measurement and continuity check. Although the proposed solution has many merits, it lacks the fault isolation because OAM packets are effectively invisible to interim LSRs.

This invention allows for creating a wrapper around LSP segments between two MPLS layer adjacent LSRs that are capble of handling OAM packets. The wrapper turnes the LSP segment to a logical LSP that is tied to the original LSP. This allows OAM packet traverse the original LSP but makes them visible to OAM-capble nodes (e.g. LSP merge-point).

Solutions that have been tried and why they didn't work:

There are no good solutions. The other alternative is to use Router Alert label and traverse the LSP hop-by-hop. But that does not guarantee traversing the same sequence of hops that are taken by the user-plane packets.

Specific elements or steps that solved the problem and how they do it:

-use of the LSP attribute concept to generate a wrapper.

Commercial value of the invention to Nortel and Nortel's major competitors:

MPLS OAM is positioned as a product diffrentiator for Nortel's MPLS based products (Passport, Optical Ethernet, Shasta, ...). Given that MPLS standards are still under development and lack of sectionalization attempts on MPLS LSPs, the timing is perfect for pushing a Nortel MPLS OAM solution based on this invention. ITU-T is targetting MPLS OAM draft recommendations (Y.1711, Y.1720) for the next ITU-T meeing (Geneva, late January 2002). Therefore, it is critical to get this invention patented (provisional filing perhaps) to protect Nortel's investments in MPLS products.

INTELLECTUAL PROPERTY LAW GROUP
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NETWORKS

How the world shares ideas.

Memorandum

NORTEL NETWORKS CONFIDENTIAL & PRIVILEGED COMMUNICATION

Date July 5, 2001

To Mina Azad

Copy Khalid Ahmad

From Allan Millard

Subject Invention Disclosure Acknowledged
Invention Disclosure No: 14758RO
Title: LABEL SWITCHED PATH OAM WRAPPER

On behalf of Nortel Networks' Intellectual Property Law Group, I acknowledge receipt of the above-referenced invention disclosure. Please refer to this number in all future communications with the Intellectual Property Law Group pertaining to this disclosure. Thank you for taking the time to submit this invention disclosure.

Your invention disclosure will be reviewed in accordance with an invention disclosure review process approved by the appropriate LOB. After the review, you will be notified of the results.

Any disclosure outside Nortel Networks (not subject to a confidentiality agreement) could have adverse legal effects on the company's ability to secure patent rights for the invention. **Thus, it is extremely important that NO disclosure be made to anyone outside Nortel Networks** as this would jeopardize these rights. For example, any of the following can constitute a disclosure:

- Communication of the invention to anyone outside Nortel Networks (whether oral or written).
- Description of the invention in a paper, magazine article, Nortel marketing or technical support material, oral presentation at a conference, or anything similar.
- Submission of the invention to a Standards Body or for publication.
- Inclusion of the invention in a Government Contract Report or proposal.
- Sale or offer for sale of any product incorporating the invention.
- Use of the invention outside of Nortel Networks, even if the invention cannot be seen or observed.

Accordingly, it is important that you advise me well in advance of any planned public disclosure of the invention. Should any public disclosure of the invention have already occurred, or is planned to occur, please notify me so that appropriate steps can be taken to potentially avoid adverse legal consequences. In the meantime, we remind you that this invention is Nortel Networks confidential and proprietary information.

Sincerely,
Allan P. Millard, IP Counsel

THIS IS EXHIBIT "C" TO THE
DECLARATION OF MINA M. AZAD
EXECUTED THIS 30TH DAY OF NOVEMBER, 2006

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NORTEL NETWORKS

How the world shares ideas.

Date	September 10, 2001
To	Mina Azad
Copy	Khalid Ahmad →*not listed in Outlook.*
From	Allan Millard
Subject	Invention Disclosure Approved
	Invention Disclosure No: 14758RO
	Title: LABEL SWITCHED PATH OAM WRAPPER

The above-identified invention disclosure was recently reviewed in accordance with the invention disclosure review process approved by the appropriate LOB, and the filing of a patent application was approved.

This application is being prepared by an outsource firm, and a patent professional at that firm will be contacting you to discuss the invention in order to prepare an accurate, detailed patent application. Once a regular patent application is filed, you may be eligible for a patent award under Nortel Networks' Corporate procedure No. 401.01.

As an inventor on a U.S. patent application you have duties which include the following:

1. Providing sufficient information on the invention in the patent application to enable one of ordinary skill in the area of the invention to make and use the invention; and

2. Disclosing prior art (e.g. public information or references) that is relevant to the invention.

The patent professional will further discuss both of these duties with you prior to filing the application.

While the patent application for the invention is a legal document, it is also a technical document. If it is technically deficient in describing the invention, it can impact the validity of the patent that issues from the application. You should therefore feel comfortable with and understand the patent application. If you do not, then please work with the patent professional to make the application technically accurate.

Please remember that the invention is Nortel Networks confidential and proprietary information and should be safeguarded against unauthorized disclosure. Any disclosure outside Nortel Networks (not subject to a confidentiality agreement) could have adverse legal effects on the company's ability to secure patent rights for the invention. Accordingly, it is important that you advise me well in advance of any planned public disclosure of the invention. Should any public disclosure of the invention have already occurred, or is planned to occur, please notify me so that appropriate steps can be taken to potentially avoid adverse legal consequences.

Thank you again for your submission. Your support of the invention disclosure process is greatly appreciated.